MULTIMEDIA **UNIVERSITY**

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FINAL EXAMINATION

TRIMESTER 2, 2016 / 2017

PCO0165 – INTRODUCTION TO COMPUTER ARCHITECTURE AND OPERATING SYSTEM
(Foundation in Information Technology)

6 MARCH 2017
9.00 a.m – 11.00 a.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of 3 pages (excluding the cover page) with 5 questions only.

2. Answer **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please write all your answers in the Answer Booklet provided.

Instructions: Answer **ALL** questions. Write your answers in the Answer Booklet.

QUESTION 1 [10 Marks]

a. Explain briefly the system interconnection as one of the main structural components of a computer.

(2 marks)

b. List **FOUR** (4) computers developed in the first generations (1944 - 1958).

(2 marks)

c. Discuss the difference between CISC and RISC processors.

(4 marks)

d. State **TWO** (2) features of the Intel Pentium IV.

(2 marks)

QUESTION 2 [10 Marks]

a. Convert the following binary numbers to decimal equivalents. Show computation steps.
   i. 10001100.111_2
   ii. 10110100.010_2

(3 marks)

b. Convert the following hexadecimal notations to their binary equivalents. Show computation steps.
   i. $45C.BA_{16}$
   ii. $7EF.66_{16}$

(3 marks)

c. Convert the following octal notations to decimal equivalents. Show computation steps.
   i. 276_8
   ii. 0.65_8

(4 marks)

QUESTION 3 [10 Marks]

a. Calculate the addition arithmetic operation of the following unsigned binary numbers. Show computation steps.
   i. $00110110 + 01110110$
   ii. $11101110 + 10111001$

(2 marks)

Continued...

b. Calculate the subtraction arithmetic operation of the following unsigned binary numbers. Show computation steps.
   i. 11101011 - 00110110
   ii. 11110111 - 10111100

(3 marks)

c. Solve the following addition operations using the two's complement addition in 5-bit for signed integer. Show computation steps.
   i. 6 + (-2)
   ii. (-5) + (8)

(3 marks)

d. Solve the subtraction operation (-8) - (-4) using the two's complement subtraction in 4-bit for signed integer. Show computation steps.

(2 marks)

QUESTION 4 [10 Marks]

a. Explain the meaning of the following assembly language instructions code.
   i. LXI H, 2020H
   ii. STA 6012H
   iii. MVI M, 55H
   iv. INX H

(4 marks)

b. Write an assembly program based on the following steps:
   * Let say, the memory locations contain the following operands:
     (5000H) = 1AH
     (5001H) = 2AH
     (5002H) = 3AH

   * Rearrange the contents of memory to the new locations as showed in the result.
     Result:
     (5000H) = 3AH
     (5001H) = 1AH
     (5002H) = 2AH

(6 marks)

QUESTION 5 [10 Marks]

a. In the third generation of operating system, the multiprogramming system was introduced. Explain briefly the multiprogramming concept.

(2 marks)

b. User interface (UI) is one of the most critical factors of designing an operating system because a user interface (UI) brings structure to the interaction between a user and the computer. List and explain briefly the **TWO (2)** common types of user interface (UI) found in the operating system.

(2 marks)

Continued...

c. Describe the function of task manager tool in Windows operating system.

(2 marks)

d. File protection is accomplished by controlling the type of file access. Access is allowed or rejected determined by a number of factors such as the type of access requested. Every file or directory has information on the type of users and accesses that they are able to do on a directory or file. Describe the following access list on a UNIX operating system "*drwxr-xrw-*".

(4 marks)

End of Paper